Worcestershire Acute Hospitals NHS Trust

Administration of Blood Components and Management of Transfusion Requests

Department / Service:	Pathology, Blood transfusion	
Originator:	Gill Godding	Lead Transfusion Practitioner
Accountable Director:	Suneil Kapadia	Chief Medical Officer
Approved by:	Clinical Governance Group	
Date of approval:	4th September 2018	
Expiry Date:	4th March 2021	
Target Organisation(s)	Worcestershire Acute Hospitals NHS Trust Worcestershire Health and Care trust	
Target Departments	All	
Target staff categories	Staff involved in the transfusion process	

Key amendments to this document

Date	Amendment	Approved by:
June 2018	Inclusion of the new blood transfusion care pathway including prescription and transfusion associated overload checklist	Gill Godding
July 2020	Document extended for 6 months whilst review and approval takes place	Gill Godding

This procedure details the preparation required for the administration of a transfusion of blood/blood products to an individual who has been identified as requiring them.

This includes correctly identifying the patient and confirming that administration documentation is accurate, legible and complete. It also involves explaining the process to the patient and confirming patent venous access.

The procedure involves supporting and monitoring the patient throughout the transfusion procedure, identifying and responding promptly to indications of adverse reactions, completing relevant documentation and disposing of used blood bags and other used equipment of completion.

This procedure is relevant to anyone required to carry out this activity to support safer blood transfusion by ensuring the correct blood component or product is given to the correct patient.

Contents Page

Introduction

This procedure details the preparation required for the administration of a transfusion of blood/blood products to an individual who has been identified as requiring them.

This includes correctly identifying the patient and confirming that administration documentation is accurate, legible and complete. It also involves explaining the process to the patient and confirming patent venous access.

The process also involves supporting and monitoring the patient throughout the transfusion procedure, identifying and responding promptly to indications of adverse reactions, completing relevant documentation and disposing of used blood bags and other used equipment of completion.

This procedure is relevant to anyone required to carry out this activity to support safer blood transfusion by ensuring the correct blood or product is given to the correct patient.

All staff including prescribers involved in the transfusion process are required to successfully complete mandatory training in blood transfusion

Preparing the patient for transfusion

Transfusion should only occur in well illuminated areas where they can be readily observed. Overnight transfusions must be avoided unless the patient is severely symptomatic. Routine transfusion should occur between 08:00 and 22:00.

WR1251 Documentation for transfusion of Blood Components pathway should be used for all transfusions (operating theatres are the only exception. In the intensive care unit the prescription and observations should be recorded on the Intensive care unit chart)

The indication for transfusion, patient consent for transfusion and the Transfusion Associated Circulatory Overload (TACO) checklist should be completed before the prescription is written.

TRANSFUSION PRESCRIPTION

- Ensure that the TACO checklist is completed prior to writing the prescription
- It is the responsibility of the prescriber to ensure that any special requirements are met. E.g. irradiated, HEV negative, CMV negative, HLA matched platelets, blood warmer.
- Medications related to transfusion e.g. diuretics, antipyretics must be prescribed on a medication chart
- A new transfusion prescription should be completed for every transfusion episode
- A new prescription and TACO checklist should be completed for every new decision to prescribe blood

- **Diuretics:**
  There may be a risk of precipitating congestive cardiac failure, particularly in patients with chronic anaemia. If it is necessary to transfuse red cells this risk can be minimised by administering a diuretic (e.g. furosemide 20-40 mg orally) and closely observing the patient**.** The decision to give a diuretic must be based on clinical assessment of the patient.

Consent

If the patient is conscious and able to respond, check that they understand why they require a transfusion and have given informed consent for it.
Patient information leaflets are available in all clinical areas to aid this discussion. Additional leaflets and translations are available on the WAHT intranet A-Z Blood transfusion home site.

If unable to give informed consent then ensure that the relevant parent/guardian is aware of the requirement for transfusion. The patient should sign their consent on the WR1251 Documentation for transfusion of Blood Components

The "Documentation for transfusion of blood components", should be fully completed for every transfusion episode.

Pre transfusion checks

The patient must have an identification band in place which specifies the four unique identifiers needs for transfusion.

- Surname
- First name
- Date of birth
- NHS number
- The patient should have a patent cannula in situ.
- Check ICE to establish if units are available for use
- Perform baseline observations of:

  Blood pressure, heart rate, respiratory rate, temperature, conscious level and oxygen saturations to establish an accurate baseline PAR score.

These pre-administration checks must be completed prior to ordering the blood.
See Procedure for Blood Collection and Transfer to Satellite Fridges.

Ward Receipt

Arrival on the ward/clinical area

- When blood is delivered to a ward or department, it must be handed to an appropriately qualified member of staff who will check that the correct blood has been delivered and will sign the blood bag appropriately

Care of Blood prior to Transfusion

- Transfusion will begin as soon as possible after delivery of the blood unit.

- Once the blood has been removed from the issue fridge it must be completely transfused within 4 hours of removal.

- If the transfusion has not been started within 30 minutes and there is no prospect that it will be transfused within the next 3 ½ hours the pack must be returned to blood bank to be wasted. Blood/components must never be destroyed in the clinical area.

- Blood which is being transported in transfer boxes (supplied by the laboratory) can be stored for up to 4 hours after removal from the blood bank refrigerator. The box must not be opened until the units are to be transfused or transferred to a satellite fridge. Any unused units must be returned to the blood bank as soon as possible.

- Blood must not be stored in ward refrigerators under any circumstances.

Administration sets for Transfusion

- Blood will be transfused through a sterile Blood Transfusion giving set with a 170 - 200µm filter which is specifically designed for the purpose. Additional filters will not be required.

- Priming the line: The line can be primed with the blood component itself it is not necessary to prime with normal saline.

- The giving set MUST be changed if the component is changed i.e. from red cells to Platelets.

- Albumin can be transfused through an ordinary giving set with a 15 µm filter

- Special paediatric giving sets will be used for transfusions to infants

Each blood transfusion giving set must only be used for a maximum of 12 hours.

Blood Warming

- The decision to warm blood is the responsibility of a doctor and must be documented in the patient's notes. Blood Warmers should be used when a patient is found to have Cold Agglutinins or massive transfusion.

- Blood will only be warmed using a specifically designed commercial device (CE marked) with a visible thermometer and audible warning

- Blood warming devices will only be operated by personnel who have received training and regular updates in their use.

- Medications are not to be added to blood components under any circumstances

Bedside checking procedure

The unit if blood should be checked at the patient's side by the administrator and witness.

Patient Identity checks:

Identify your patient by using the formal checklist within the WR1251 Documentation for transfusion of Blood Components

1. Ask you patient to tell you their name and date of birth
2. Compare what they say against the ID band
3. Compare the ID band details of name, date of birth and NHS number against:
    - The prescription
    - The compatibility slip and the traceability slip

If there is any discrepancy DO NOT TRANSFUSE

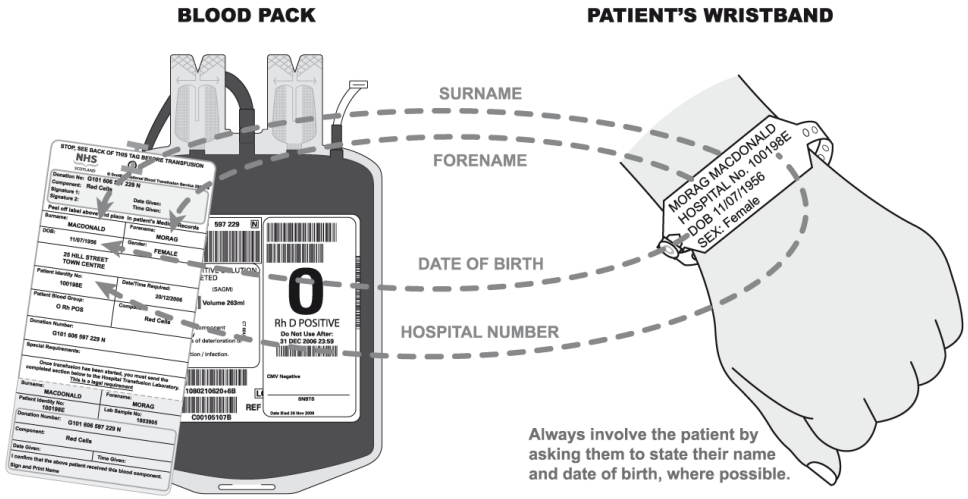
Component checks:

- Check the blood group details on the component matches the compatibility and traceability slip
- Check the donor number on the unit against the compatibility slip and traceability slip
- Check the expiry date of the unit
- Check the unit for discolouration, lumps and leaks. If there are any return to the laboratory.
- Check if the patient has any special requirements

Complete the transfusion documentation for each unit transfused. (Recorded in the "bedside check" box on the transfusion documentation)

If the blood unit pack is accidentally punctured during the setting up procedure or not transfused for any other reason, the blood bank must be informed as soon as possible and the unit returned

The final check should be the compatibility label against the wristband.



Administration

- Connect the unit to the administration set using an aseptic none touch technique
- The administration line should be primed in the presence of the patient once the bedside checks are completed.
- Feed the line into the infusion pump and set at the appropriate rate
- Attach the line to the patient's cannula and commence transfusion.
- Advise the patient about any possible signs and symptoms they may experience and make sure they can reach the call bell.
- Remain with patient for the next 5 minutes to observe for any adverse event which could be linked to ABO incompatibility.

Component	Recommended administration time	Exceptions
Red cells	1 ½ - 4 hours	Massive haemorrhage Exchange
FFP/Octoplas	10-20 mls/kg/hour	Massive haemorrhage
Platelets	30-60 minutes	Massive haemorrhage
Cryoprecipitate	10-20 mls/kg/hour	Massive haemorrhage

Care and monitoring of patients during transfusion

- Severe reaction to transfusion is most likely to occur within the first 15 minutes of the start of each unit. The patient must be closely observed during this period.

- The observations should be repeated at 15 minutes from the start of the transfusion. No further observations are required during transfusion unless the patient shows signs of an adverse reaction.

- Regular visual checks should be made on the patient to check for signs of transfusion reaction.

- Observations relating to the transfusion will be recorded on the WR2151 Documentation for transfusion of blood components (With the exception of theatres and Intensive care unit where the patient is being continuously monitored. The start time, 15 minute observations and completion of the transfusion should be indicated on the theatre anaesthetic chart or ITU observation chart.)

- Transfusion in the operating theatre is the only exception to the use of the WR2151 Documentation for transfusion of blood components. The start of the transfusion is to be documented on the anaesthetic observation chart. The patient must not be transferred from recovery to the ward area without the completion of the WR2151 Documentation for transfusion of blood components.

- Traceability is to be maintained at all times

End of transfusion

- Post transfusion observations are to be completed and recorded appropriately. These observations can be used as the baseline observations for the next unit providing it is commenced within an hour.

- The empty bag should be put back into the transportation bag and kept in the dirty utility for 24 hours. After 24 hours this unit can be disposed of in clinical waste. The empty unit is kept in case of delayed transfusion reaction to enable testing to take place by the laboratory.

- When the transfusion is completed the traceability slip must be put in the traceability collection tray for collection and sent to the transfusion laboratory.

- The transfusion documentation must be filed in the patient's medical notes.

- The doctor will indicate in the patient's notes whether there were any adverse effects and the action taken and if the effected benefits of transfusion have been achieved.

- For day-case patients receiving a blood transfusion, the Post Transfusion Advisory Leaflet should be given to the patient prior to going home indicating emergency contact numbers.

Patients should be asked to report symptoms which develop within 24 hours of completion of the transfusion to the ward area where they were transfused.

Acute transfusion reactions

Signs and symptoms of an acute transfusion reaction

Acute transfusion reactions can present with a range of symptoms and signs of varying severity.

Mild transfusion reactions (1= mild) do not need to be reported to the laboratory

	1 = Mild	**2 = Moderate**	**3 = Severe**
	A temperature 38 ^{o}C and a rise between 1and 2^{o}C from Pre transfusion values, but no other symptoms/signs	A rise in temperature of 2^{o}C or more, or fever 39 ^{o}C or over and/or rigors, chills, other inflammatory symptoms/signs such as myalgia or nausea which precipitate stopping the transfusion	A rise in temperature of 2^{o}C or more, and/or rigors, chills, or fever 39 ^{o}C or over, or other inflammatory symptoms/signs such as myalgia or nausea which precipitate stopping the transfusion, prompt medical review AND/OR directly results in, or prolongs hospital stay.

Allergic type reaction	Transient flushing, urticaria or rash	Wheeze or angioedema with or without flushing/urticaria/rash but without respiratory compromise or hypotension	Bronchospasm, stridor, angioedema or circulatory problems which require urgent medical intervention AND/OR, directly result in or prolong hospital stay, or **Anaphylaxis** (severe, life-threatening, generalised or systemic hypersensitivity reaction with rapidly developing airway and/or breathing and/or circulation problems, usually associated with skin and mucosal changes
Reaction with both allergic and febrile features	Features of mild febrile **and** mild allergic reactions	Features of both allergic and febrile reactions, at least one of which is in the moderate category.	Features of both allergic and febrile reactions, at least one of which is in the severe category
Hypotensive reaction		Isolated fall in systolic blood pressure of 30 mm or more occurring during or within one hour of completing transfusion **and** a systolic blood pressure 80 mm. Or less in the absence of allergic or anaphylactic symptoms. No/minor intervention required.	Hypotension, as previously defined, leading to shock (e.g. Acidaemia, impairment of vital organ function) without allergic or inflammatory symptoms. Urgent medical intervention required.

Febrile and allergic reactions may present within 4 hours, whilst hypotensive reactions are considered as presenting within one hour.

Severity Grades for haemolytic transfusion reactions			
1=DAT without haemolysis	2=mild	3=moderate	4=severe
Not SHOT reportable	2 of the following • Falling Hb • Positive DAT • spherocytes	• Falling Hb • Rise in bilirubin • +/- Positive DAT • +/- spherocytes	• Falling Hb • Rise in bilirubin • Renal impairment • +/- Positive DAT • +/- spherocytes

If a severe reaction is suspected:

- **STOP the transfusion**.
- Seek urgent medical assistance
- Take down the blood with the giving set and replace with saline to be run slowly to maintain venous access.
- Use an ABCDE approach to any resuscitative treatment including medications to treat anaphylaxis
- Check that the unit details match the patients (i.e. name, component group etc.)

- Take all observations and calculate PAR score, temperature, pulse, respirations and blood pressure readings etc. immediately and continue at frequent intervals.
- Record the volume and colour of all urine passed.
- Test urine for haematuria
- Contact blood bank to inform them of the situation and to obtain a reaction report form
- Return the unit of blood that was being transfused to the hospital blood bank
- Collect any blood samples requested by them without delay.
- Complete the reaction report form and return it to the blood bank
- Blood Bank to notify Transfusion practitioner to investigate reaction
- The clinician responsible for the patient should discuss all serious transfusion reactions with the duty consultant haematologist

Be aware if the patient undergoing massive haemorrhage develops hypotension careful clinical risk assessment is required to ascertain if the blood component or the haemorrhage is the cause.

If the patient develops sustained febrile symptoms or signs of moderate severity, bacterial contamination or haemolytic reaction should be considered

In the clinical area refer to the "Flow diagram for recognition, initial management and subsequent management and investigation of transfusion reactions" (BCSH Guidelines 2012) on the WR1251 Documentation for transfusion of Blood Components pathway for further information.

Transfusion reaction management Algorithm

For management all transfusion reactions follow the algorithm below

Affix Patient Label here or record

NAME: . . . . . .

NHS NO:

HOSP NO:

D.O.B: D D / M M / Y Y Y Y MALE ☐ FEMALE ☐

Ward:..... Cons.....

FLOW DIAGRAM FOR RECOGNITION, INITIAL MANAGEMENT AND SUBSEQUENT MANAGEMENT AND INVESTIGATIONS OF TRANSFUSION REACTION

Patient exhibiting possible features of an acute transfusion reaction, which may include:
Fever, chills, rigors, tachycardia, hyper or hypotension, collapse, flushing, urticaria, pain (bone, muscle, chest, abdominal) respiratory distress, nausea, general malaise

STOP THE TRANSFUSION
undertake rapid clinical assessment, check patient ID/Blood compatibility label, visually assess unit
Evidence of:
Life-threatening Airway and/or Breathing and/or Circulatory problems and/or wrong blood given and/or evidence of contaminated unit

YES

SEVERE/LIFE THREATENING
- Call for urgent medical help
- Initiate resuscitation ABC
- Is haemorrhage likely to be causing hypotension? If not discontinue transfusion (do not discard implicated unit/s)
- Monitor patient eg: TPR, BP, urinary output, oxygen saturations

- If likely anaphylaxis/severe allergy - follow anaphylaxis pathway
- If bacterial contamination likely start antibiotic treatment
- Use BP, pulse, urine output (catheterise if necessary) to guide intravenous physiological saline administration
- Inform hospital transfusion department
- Return unit (with administration set) to transfusion laboratory

- Complete reaction form
- Obtain samples
- Complete investigation form and return to laboratory
- Complete Datix

NO

Inform medical staff

MODERATE
- Temperature >39°C or rise >2°C and/or
- Other symptoms/signs apart from pruritus/ rash only

- Consider bacterial contamination if the temperature rises as above and review patients underlying condition and transfusion history
- Monitor patient more frequently eg: TPR, BP, oxygen saturations, urinary output.

- Not consistent with condition or history
- Discontinue (do not discard implicated unit/s)
- Perform appropriate investigations

Transfusion related event

If consistent with underlying condition or transfusion history, consider continuation of transfusion at slower rate and appropriate symptomatic treatment

Transfusion unrelated

MILD
- Isolated temperature >38°C and rise of 1-2°C and/or
- Pruritus/rash only

- Continue transfusion
- Consider symptomatic treatment
- Monitor patient more frequently as for moderate reactions
- If symptoms/signs worsen, manage as moderate/severe reaction (see left)

Continue transfusion

Document in notes that no further action required

Document all adverse events within the medical notes

Investigations required following transfusion reaction

Symptoms	Investigations
Fever (>2oC rise or 39 oC), and/or chills, rigors, myalgia, nausea or vomiting and/or loin pain	Standard investigations* Take samples for repeat compatibility testing, DAT, LDH and haptoglobin Take blood cultures from patient Coagulation screen Do not discard implicated unit **If febrile reaction sustained,** return unit to laboratory, repeat serological investigations (compatibility testing, antibody screen and DAT), haptoglobin and culture unit **If loin pain,** perform serological investigations as above
Mucosal swelling (angioedema)	Standard investigations* measure IgA level (EDTA sample)- if <0.07g/L , and no generalised hypogammaglobinaemia, perform confirmatory test with sensitive method and check for IgA antibodies
Dyspnoea, wheeze, or features of anaphylaxis	Standard investigations* Check oxygen saturation or blood gases. Chest X-ray (mandatory if symptoms severe) If severe or moderate allergy suspected measure IgA level. If severe allergy/anaphylaxis suspected, consider measurement of serial mast cell tryptase (plain tube) (immediate, 3 h and 24 h)
Hypotension (isolated fall systolic of 30 mm resulting in level 80mm)	Investigate as for fever If allergy suspected measure IgA level. If severe allergy/anaphylaxis consider measurement of serial mast cell tryptase, as above

* Standard investigations: full blood count, renal and liver function tests, and assessment of urine for haemoglobin
Abbreviations: DAT, direct antiglobulin test; Ig, immunoglobulin; LDH, lactate dehydrogenase

Reporting

All transfusion reaction regardless of severity must be reported in the patient's notes.

- Patients with repeated febrile non haemolytic reactions may benefit from pre medication of oral paracetamol one hour prior to transfusion.
- Patients with repeated moderate to severe allergic reactions who are not IgA deficient need to be transfused in a clinical area with resuscitation facilities. The use of prophylaxis with antihistamine may be considered although evidence of its efficacy is low. Transfusion of washed red cells or platelets and the use of solvent detergent treated Plasma should be considered.

Moderate and severe reactions MUST be reported on Datix. The Transfusion Practitioner Team or Laboratory Manager will then report these to the Medicines and Healthcare Regulatory Authority.

All cases of suspected bacterial contamination MUST be reported to NHS Blood and Transplant so they can remove any other donor units from circulation.

MONITORING AND COMPLIANCE				
This section should identify how the Trusts plan to monitor compliance with and the effectiveness of these documents. It should include auditable standards and/or key performance indicators (KPIs) and details on the methods for monitoring compliance				
What	**How**	**Who**	**Where**	**When**
These are the 'key' parts of the process that we are relying on to manage risk.	*What are we going to do to make sure the key parts of the process we have identified are being followed?*	*Who is responsible for the check?*	*Who will receive the monitoring results?*	*Set achievable frequencies.*
The key parts of the transfusion processes are: • The decision to transfuse • Patient information and consent • Appropriate prescribing of blood • The request for transfusion • Collection and delivery of blood components • The administration of blood • Monitoring the patient throughout the process • Completion and documentation of the event • Management of transfusion reactions	An Audit will be completed to establish if the key parts of the process are being followed	Transfusion practitioners	Trust Transfusion committee	yearly

CONSULTATION	
This Treatment pathway has been circulated to the following individuals for consultation	
Name	**Designation**
Dr Thomas Skibbe	Consultant Haematologist
Dr Alyson McClung	Consultant physician
Dr Nick Turley	Consultant A&E
Dr Shiju Mathew	Consultant anesthetist
Dr Baylon Kamalarajan	Consultant paediatrician
Mr Steve Goodyear	Consultant surgeon - vascular
Catherine Hilman-Cooper	Consultant Obstetrics
Manon Van Setters	Consultant gynaecologist
Jane Brown	Clinical Governance facilitator
Cathy Lim	National blood service liaison
Rebecca Thompson	Community IV therapy lead
Camran Khan	Transfusion Laboratory manager
Juliette Stone	Senior Sister Theatres
Debra Clinton	Assistant Transfusion practitioner
Jon Dickens	Charge Hand A&E
This Treatment pathway has been circulated to the chair(s) of the following committee's / groups;	
Trust Transfusion Committee	
Safe Patient group	

IMPLEMENTATION
Plan for implementation
How are you going to implement and ensure all relevant staff are aware of this pathway?
The individual members of the transfusion committee will be responsible for informing their relevant clinical directorate
The updated pathway will be presented at the link nurse day. The link nurses will cascade the information to the ward teams

DISSEMINATION
A link of the blood transfusion treatment pathway will be forward to all matrons, and ward managers once the pathway has been ratified

TRAINING AND AWARENESS
This section should refer to training as identified in the Trusts Training Needs Analysis Appendix A of the Trusts Mandatory Training Policy
All staff involved in the transfusion process should be trained and competent in the process they are taking part in. The training is described in the Trusts Training Needs Analysis Appendix A of the Trusts Mandatory Training Policy

SUPPORTING DOCUMENT ONE – EQUALITY IMPACT ASSESSMENT TOOL		
To be completed by the Treatment pathway owner and submitted to the appropriate committee for consideration and approval.		
		Yes/No
1.	Does the treatment pathway affect one group less or more favourably than another on the basis of:	**no**
	Race	**no**
	Ethnic origins (including gypsies and travellers)	**no**
	Nationality	**no**
	Gender	**no**
	Culture	**no**
	Religion or belief	**no**
	Sexual Orientation	**no**
	Age	**no**
2.	Is there any evidence that some groups are affected differently?	**no**
3.	If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?	**no**
4.	Is the impact of the policy/guidance likely to be negative? If so can the impact be avoided?	**no**
5.	What alternatives are there to achieving the policy/guidance without the impact?	**no**
6.	Can we reduce the impact by taking different action?	**no**
7.	Other comments	**none**

If you have identified a potential discriminatory impact of this key document, please refer it to Human Resources, together with any suggestions as to the action required to avoid/reduce this impact.

For advice in respect of answering the above questions, please contact Human Resources.

SUPPORTING DOCUMENT TWO – FINANCIAL IMPACT ASSESSMENT		
To be completed by the Treatment pathway owner and submitted to the appropriate committee for consideration and approval.		
		Yes/No
1.	Does the implementation of this document require any additional Capital resources	**no**
2.	Does the implementation of this document require additional revenue	**no**
3.	Does the implementation of this document require additional manpower	**no**
4.	Does the implementation of this document release any manpower costs through a change in practice	**no**
5.	Are there additional staff training costs associated with implementing this document which cannot be delivered through current training programmes or allocated training times for staff	**no**
6.	Other comments	**none**

If the response to any of the above is yes, please complete a business case and which is signed by your Finance Manager and Directorate Manager for consideration by the Accountable Director before progressing to the relevant committee for approval